

03500.015727.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

TAKEO TSUKAMOTO

Application No.: 09/941,780

Filed: August 30, 2001

For: ELECTRON-EMITTING DEVICE, )  
ELECTRON-EMITTING )  
APPARATUS, IMAGE DISPLAY )  
APPARATUS, AND LIGHT- )  
EMITTING APPARATUS )

Examiner: D. H. Vu

Group Art Unit: 2821

January 13, 2003

Commissioner for Patents  
Washington, D.C. 20231

**Match & Return**

SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56 and in accordance with the practice under 37 C.F.R. §§ 1.97 and 1.98, the Examiner's attention is directed to the documents listed on the enclosed Form PTO-1449. Copies of the listed documents are also enclosed.

For a concise explanation of relevance for various non-English documents, the Examiner is directed to the corresponding English-language abstracts, English translations, and/or English-language counterparts listed in association with the corresponding non-English documents in the attached Form PTO-1449.

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For the concise statement of relevance of non-English document 2000-277003, the Examiner is respectfully referred to English-language counterpart document US 2002/136896.

For the concise statement of relevance of non-English documents 04-212236 and 03-295131, the Examiner is respectfully referred to English-language counterpart documents 5,192,240, 5,214,346, and A1 443 865.

For the concise statement of relevance of non-English documents 05-159696 and 05-198253, the Examiner is respectfully referred to English-language counterpart documents 5,382,867 and A1 535 953.

For the concise statement of relevance of non-English document 05-274997, the Examiner is respectfully referred to English-language counterpart document 5,612,587.

For the concise statement of relevance of non-English document 11-232997, the Examiner is respectfully referred to English-language counterpart documents 6,313,572 and A1 936 650.

For the concise statement of relevance of non-English document 10-289650, the Examiner is respectfully referred to English-language counterpart documents 6,135,839 and A1 871 195.

The Examiner's attention is also directed to the following U.S. Applications:

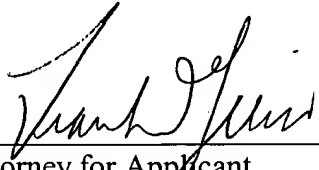
<u>APPLICATION NO.</u>	<u>FILING DATE</u>	<u>GROUP ART UNIT</u>
09/178,680	10/26/98	2879
09/865,698	5/29/01	2821
09/941,595	8/30/01	2879
09/941,642	8/29/01	2879
09/640,643	8/29/01	2852

A copy of each cited application is enclosed.

It is respectfully requested that the above information be considered by the Examiner and that a copy of the enclosed Form PTO-1449 be returned indicating that such information has been considered.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

  
\_\_\_\_\_  
Attorney for Applicant  
Registration No. 42,476

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NY MAIN\_#318236v1

FORM PTO 1449 (modified)		ATTY DOCKET NO. <b>03500.015727.</b>		APPLICATION NO. <b>09/941,780</b>	
U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		APPLICANT <b>Tak o Tsukamoto</b>			
LIST OF REFERENCES CITED BY APPLICANT(S) (Use several sheets if necessary)		FILING DATE <b>August 30, 2001</b>		GROUP <b>2821</b>	
U.S. PATENT DOCUMENTS					
*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS
	<b>5,773,921</b>	<b>06/30/98</b>	<b>Keesman et al.</b>	<b>313</b>	<b>309</b>
	<b>5,973,444</b>	<b>10/26/99</b>	<b>Xu et al.</b>	<b>313</b>	<b>309</b>
	<b>5,935,639</b>	<b>8/10/99</b>	<b>Sullivan et al.</b>	<b>427</b>	<b>78</b>
	<b>4,956,578</b>	<b>9/11/90</b>	<b>Shimizu et al.</b>	<b>315</b>	<b>3</b>
	<b>5,185,554</b>	<b>2/9/93</b>	<b>Nomura et al.</b>	<b>313</b>	<b>495</b>
	<b>6,448,709</b>	<b>9/02</b>	<b>Chuang et al.</b>	<b>313</b>	<b>497</b>
	<b>6,204,597</b>	<b>03/01</b>	<b>Xie et al.</b>	<b>313</b>	<b>310</b>
FOREIGN PATENT DOCUMENTS					
	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS
	<b>WO 89/07163</b>	<b>08/10/89</b>	<b>Japan</b>		
	<b>WO 90/07023</b>	<b>06/28/90</b>	<b>PCT</b>		
	<b>JP 08-115652</b>	<b>05/07/96</b>	<b>Japan</b>		
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
	<b>R.T.K. Baker et al., "Formation of Carbonaceous Deposits from the Platinum-Iron Catalyzed Decomposition of Acetylene," 37 J. Catal. 101-105 (1975).</b>				
	<b>R.T.K. Baker, "Catalytic Growth of Carbon Filaments," 27 (3) Carbon 315-323 (1989).</b>				
	<b>S. Iijima, "Helical Microtubules of Graphitic Carbon," Nature, Vol. 345, 56-58 (1991).</b>				
	<b>T. W. Ebbesen et al., " Large-Scale Synthesis of Carbon Nanotubes," Nature, Vol. 358, 220-222 (1992).</b>				
	<b>W. A. DeHeer et al., "Aligned Carbon Nanotube Films: Production and Optical and Electronic Properties," Science Vol. 268, 845-847 (1995).</b>				
EXAMINER			DATE CONSIDERED		

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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U.S. PATENT DOCUMENTS							
*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
		5,577,943	11/96	Vickers et al.	445	24	
		2002/136896	09/26/00	Takikawa et al.	428	408	
		5,192,240	03/09/93	Komatsu	445	24	
		5,214,346	05/25/93	Komatsu	313	309	
		5,382,867	01/17/95	Maruo et al.	313	309	
		5,612,587	03/18/97	Itoh et al.	313	309	
		6,313,572	11/06/01	Yamada	313	310	
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
		0 758 028 A2	02/12/97	EPO	D01F	9/127	English
		WO 98/05920	02/12/98	PCT	G01B	7/34	English
		0 394 698 A2	10/31/90	EPO	H01J	1/30	English
		2000/277003	06/10/00	Japan	H01J	9/02	No
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)							
		T. Guo et al., "Catalytic Growth of Single-Walled Nanotubes by Laser Vaporization," Ch m Phys. Lett., Vol. 243, 49-54 (1995).					
		A. G. Rinzler et al., "Unraveling Nanotubes: Field Emission from an Atomic Wire," Science, Vol. 269, 1550-1553 (1995).					
		W. A. DeHeer et al., "A Carbon Nanotube Field-Emission Electron Source," Science, Vol. 270, 1179-1180 (1995).					
		T. Kyotani et al., "Preparation of Ultrafine Carbon Tubes in Nanochannels of an Anodic Aluminum Oxide Film," Chem. Mater., Vol. 8, 2109-2113 (1996).					
		A. Thess et al., "Crystalline Ropes of Metallic Carbon Nanotubes," Science, Vol. 273 483-487 (1996).					
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FOREIGN PATENT DOCUMENTS					
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	<b>0 797 233 A2</b>	<b>09/24/97</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>
	<b>0 980 089 A1</b>	<b>02/16/00</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>
	<b>0 986 084 A2</b>	<b>03/15/00</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>
	<b>1 117 118 A1</b>	<b>07/08/01</b>	<b>EPO</b>	<b>H01J</b>	<b>1/312</b>
	<b>0 716 439</b>	<b>06/12/96</b>	<b>EPO</b>	<b>H01J</b>	<b>3/02</b>
	<b>2-112125</b>	<b>04/24/90</b>	<b>JAPAN</b>	<b>H01J</b>	<b>1/30</b>
					<b>Abst. &amp; corresponding U.S. Patent 4,956,578</b>
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
	<b>H. Dai et al., "Single-Wall Nanotubes Produced by Metal-Catalyzed Disproportionation of Carbon Monoxide," Chem. Phys. Lett., Vol. 260, 471-475 (1996).</b>				
	<b>H. Dai et al., "Nanotubes as Nanoprobes in Scanning Probe Microscopy," Nature, Vol. 384, 147-150 (1996).</b>				
	<b>A. C. Dillon et al., "Storage of Hydrogen in Single- Walled Carbon Nanotubes," Nature, Vol.386, 377-379 (1997).</b>				
	<b>W.P. Dyke et al., "Field Emission", <i>Advances in Electronics and Electron Physics</i>, Vol. 8, (1956) pp. 89-185</b>				
	<b>C.A. Spindt et al., "Physical Properties of Thin-Film Field Emission Cathodes with Molybdenum Coatings", <i>Journal of Applied Physics</i>, Vol. 47, No. 12 (1976), pp. 5248-5263</b>				
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	3-20941	01/29/91	JAPAN	H01J	31/12 Abst. & corresponding U.S. Patent 5,185,554
	5-211029	08/20/93	JAPAN	H01J	1/30 No
	8-264109	10/11/96	JAPAN	H01J	1/30 Abst.
	9-82214	3/28/97	JAPAN	H01J	1/30 Abst. & European Equivalent 0 716 439
	1 113 478 A1	7/02	EPO		
	1 122 344 A3	8/01	EPO		
	A0 913 508	05/06/99	EPO	D01F	9/127 English
	09-188600	07/22/97	Japan	C30B	29/62 Abst.
	A1 443 865	08/28/91	EPO	H01J	21/10 English
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
	C.A. Mead, "Operation of Tunnel-Emission Devices", <i>Journal of Applied Physics</i> , Vol. 32, No. 4, (1961), pp. 646-652				
	Toshiaki Kusunoki et al., "Fluctuation-Free Electron Emission from Non-Formed Metal-Insulator-Metal (MIM) Cathodes Fabricated by Low Current Anodic Oxidation", <i>Japanese Journal of Applied Physics</i> , Vol. 32 No. 11B, (1993), p. L1695-1697				
	M.I. Elinson et al., "The Emission of Hot Electrons and the Field Emission of Electrons from Tin Oxide", <i>Radio Engineering and Electronic Physics</i> , (1965) pp. 1290-1296				
	G. Dittmer, "Electrical Conduction and Electron Emission of Discontinuous Thin Films", <i>Thin Solid Films</i> , Vol. 9, (1972) pp. 317-329				
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	<b>04-212236</b>	<b>03/08/92</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>03-295131</b>	<b>12/26/91</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>A2 535 953</b>	<b>04/07/93</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>
	<b>05-159696</b>	<b>06/25/93</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>05-198253</b>	<b>08/06/93</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>05-274997</b>	<b>10/22/93</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>11-232997</b>	<b>08/27/99</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>A1 936 650</b>	<b>08/18/99</b>	<b>EPO</b>	<b>H01J</b>	<b>3/02</b>
	<b>10-289650</b>	<b>10/27/98</b>	<b>Japan</b>	<b>H01J</b>	<b>1/30</b>
	<b>A1 871 195</b>	<b>10/14/98</b>	<b>EPO</b>	<b>H01J</b>	<b>1/30</b>
OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)					
	<b>M. Hartwell et al., "Strong Electron Emission from Patterned Tin-Indium Oxide Thin Films", IEEE Trans. Ed. Conf., (1983) pp.519-521</b>				
	<b>Hisashi Araki et al., "Electroforming and Electron Emission of Carbon Thin Films, Journal of th Vacuum Society of Japan, 1983 (with English Abstract on p. 22)</b>				
	<b>U.S. PATENT APPLICATION PUBLICATION NO. US 2002/0009637A1, 1/24/02 (Murakami et al.)</b>				
	<b>U.S. PATENT APPLICATION PUBLICATION NO. US 2001/0006232A1, 7/5/01 (Choi et al.)</b>				
	<b>Rodriguez et al., "Catalytic Engineering of Carbon Nanostructures," Langmuir 11, 3862-3866 (1995).</b>				
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